

COMMUNICATION DEVICE

The present invention relates to apparatus and method for providing two-way communication between two users. In particular, but not exclusively, the invention relates to a way in which communication between two users can occur whereby one of the users is given the impression that the communication they are having is with an everyday object such as a teddy bear or child's doll.

It is well known that toys provide a great learning tool for teaching young children or those with learning disabilities. However, most toys such as teddy bears, dolls or action figures rely upon the user's imagination for many of the games played and thus the lessons which can be learnt. Education, discipline and development of children in early years is thus often limited by their own limitations.

Some toys are known which provide for some interaction between the child and the toy. For example radio controlled cars which use a master transmitter and a slave receiver allow a child to control the motion of a toy. Alternatively some toys provide a way in which a child can interact with a toy which will respond with a number of predetermined responses such as beeps or flashing lights. The responses from such interactive toys are limited as will be known by those skilled in the art.

Learning in a child or person with learning difficulties such as a disabled person may be restricted as a result of a problem with the relationship between the learner and the teacher. For example there are

occasions when children will not listen to their parents. As a result teaching of manners and discipline such as doing homework, tidying up, stopping children crying and encouraging them to eat food can be restricted.

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Another problem is that on some occasions a parent or guardian may need to leave a child or learner unaccompanied in a room whilst the guardian attends to some other matter. Under such circumstances it is known that a child may be in danger as they may interact with household objects which may cause them harm. In addition if such a guardian is forced to leave a child alone any learning in which the child is involved must be terminated until the guardian returns.

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It is an aim of embodiments of the present invention to mitigate at least partially the above-referenced problems.

According to a first aspect of the present invention there is provided apparatus for providing two-way communication between a first user and a further user comprising:

a master communication device; and  
a slave communication device, disguised as an everyday object, and including circuitry means for enabling said two-way communication via said master communication device; wherein

said slave communication device is disguised so that when said two-way communication is in progress, said first user will believe that said communication is between said first user and said everyday object.

According to a second aspect of the present invention there is provided a method for providing two-

way communication between a first user and a further user comprising the steps of:

providing a slave communication device, disguised as an everyday object, and a master communication device  
5 arranged for two-way communication therebetween;

providing said further user with access to only said master communication device and said first user with access to only said slave device; and

transmitting and receiving at least one  
10 communication signal over a wireless communication link between said master and slave devices; whereby

by virtue of the disguise of said slave communication device the two-way communication will appear, to said first user, to be between said first user  
15 and said everyday object.

According to a third aspect of the present invention there is provided a method for promoting learning in a learner user comprising the steps of:

20 providing a slave communication device disguised as an everyday object and a master communication device;

transmitting and receiving at least one communication signal over a wireless communication link between said master device and said slave device; whereby

25 a further user having access to only said master device can communicate, via said communication link, with said learner user having access to only said slave device thereby promoting learning in said learner user.

30 Embodiments of the present invention provide the advantage that a guardian or parent can speak from a master unit through a toy or other everyday object giving the child the impression that the toy is talking and that that child (or other person with learning difficulties)  
35 is having a one to one conversation with the everyday

object. This can be a very powerful tool for the education, discipline and development of children in their important years because if children will not listen to their parents they may listen to their favourite  
5 character such as their teddy bear.

Embodiments of the present invention provide the advantage that the slave communication device through which a child communicates is a computer having a  
10 monitor or other screen which enables a wide range of selectable characters to be chosen with which a child may interact. In this way the communication device is disguised so that the child thinks communication is occurring with the displayed character.

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Embodiments of the present invention provide the possibilities for children to be taught manners, discipline such as doing homework, tidying up, stopping children crying and encouraging them to eat food. This  
20 may be done whilst the child is alone in a room whilst their parent or guardian may be elsewhere carrying out another function and will only listen to their child or may observe them on a video unit.

Embodiments of the present invention enable parents to have an unlimited, natural and spontaneous dialogue with their child through their child's favourite toy. Since the parent or guardian or other teacher communicates through the toy via a two-way communication  
25 link the toy is inherently allowed to speak in any language. Embodiments of the present invention include, in a slave communication device located inside the everyday object, a voice alteration mechanism so that the parent or guardian's voice is disguised so that the child  
30 will not recognise it.  
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Embodiments of the present invention provide the advantage that the master and slave communication devices may be used as baby alarms or, when a child has outgrown the system it may be used as a useful way for users to communication between rooms in a house.

Embodiments of the present invention will now be described in detail hereinafter with reference to the accompanying drawings in which:

Figure 1 illustrates use of an embodiment of the present invention;

Figure 2 illustrates a master communication device;

Figure 3 illustrates an everyday object in which is located a slave communication device;

Figure 4 illustrates a control panel on the master communication device;

Figure 5 illustrates components of the circuitry in the slave communication device;

Figure 6 illustrates a portion of the master communication device;

Figure 7 illustrates a portion of the everyday object disguising the slave communication device;

Figure 8 illustrates two-way communication between a child and a parent; and

Figure 9 illustrates parts of a PC.

In the drawings like reference numerals refer to like parts.

Figure 1 illustrates an imaginary location in a house and is meant to illustrate two rooms 10 and 11 separated by a wall 12. It will be understood that embodiments of the present invention are not limited to use in such an environment. A first user 13 such as a

child or person suffering from a learning disability is placed in room 11 whilst a further user 14, such as a parent or guardian is located away from the child 13. An everyday object 15 such as a child's teddy bear or doll is located with the child. A video camera 16 is arranged to provide a view of the room where the child is located. The view is displayed on the monitor 17 which may be observed by the parent. It will be understood that embodiments of the present invention may be used without the video and monitor link in which situation the parent may either discreetly observe a child through a window or by being located in the same room as the child in a hidden way. Alternatively a parent may not have a view of the child but will only communicate with the child through a master communication device 18.

The master communication device 18 may be seen in more detail in figure 2 and includes a microphone 20 into which a parent can speak. A speaker 21 which enables a voice of a child speaking to the everyday object 15 to be relayed to the parent. An on/off switch 22 and a user interface/control panel 23. The control panel 23 is described in more detail with reference to figure 4 below. The master communication device 18 also includes an antenna 24 and communication signal transmitting and receiving means to enable a voice of the parent to be transmitted via the microphone 20 and antenna 24 to a receiver and circuitry in the slave device located in the everyday object 15 which can translate the received communication signal into an audible voice via a speaker. It will be understood that the master communication device could be provided in any form or unit and may include a headset which a parent or guardian 14 could wear for prolonged use. Embodiments of the present

invention may include an LED to indicate whether the master communication device is on or off.

Figure 3 illustrates a childs teddy bear as an example of a typical toy which maybe used to house a slave communication device. A teddy bear is selected as being a toy common to both sexes. Alternatively a toy soldier or childs doll may be used. It will be understood that the present invention is not limited to disguising the slave communication device as a toy. Rather a broad range of everyday objects maybe utilised so that a child would be under the impression that they were having a conversation with that everyday object when a parent was speaking to them via the master communication device. The teddy bear 15 includes a body portion which disguises the circuitry required by the slave communication device to enable two-way communication with the master communication device. The disguise may be formed from a plastic or fur covering or other material and may include an internal framework to provide a predetermined shape to the everyday object. The body portion of the disguise covers substantially all of the slave communication device so that it will not be obvious to a learner user that such components exist. The teddy bear 15 includes movable eyes 30, a movable mouth piece 31 and a movable limb such as a paw 32. In order to move these movable portions mechanical drive units may be provided in the toy as will be known by those skilled in the art. The movable portions of the disguise can be synchronised to move in time with the voice of the parent or guardian as they talk. Alternatively movement may be specifically provided for by providing movement control buttons on the user interface 23 of the master communication device.

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A charging connection 33, which is shown in more detail in figure 7, is provided so that power to the slave communication device may be recharged at a convenient moment. An LED 34 may be provided to indicate whether the slave communication device is on or off. This will be discreetly placed, such as for example within a fold of the teddy bears skin or may be omitted completely.

An on/off control 35 is also provided as a button disguised as a part of the body of the toy 15. A parent or guardian may discreetly turn the slave communication device on or off by pressing this button without the child being aware of the subterfuge.

Figure 4 illustrates the user interface 23 of the master communication device 18 in more detail. The user interface includes a system on/off control 40 which controls whether the master communication device is on or off. A movement control selection switch 41 is also provided which can disable or enable movement of the various moving parts of the teddy bear. A volume control 42 is also provided which can control the volume of the speaker 21 of the master communication unit. Other synchronisation switches 43 and 44 may be provided to disable lip synchronisation or arm synchronisation respectively to the parents voice.

Figure 5 illustrates internal parts of the teddy bear comprising the slave communication device 50.

The communication unit 50 is housed within the body of the teddy bear which thus acts as a disguise so that a child would be unaware of the units presence. In this way a parents voice, or parents disguised voice, emitted



from the speaker 51 of the slave communication device will appear to come from the teddy bear rather than from the parent. The slave communication device 50 includes an antenna 52 from which a communication signal can be transmitted to the antenna 24 of the master communication device or signals from that master communication device can be received at the slave communication device. An on/off switch 53 is controlled by a user pressing button 35 on the teddy bear. A volume control 54 permits the volume emitted by the speaker 51 to be controlled thus selecting the volume which the child hears coming from the toy. A microphone 55 detects the voice of a child talking to the teddy bear which can then be transmitted to the master communication unit so that the parent can hear what the child is saying.

Figure 6 illustrates a charger connection point 60 on the master communication device which enables a battery in that device to be recharged. A headset connection point 61 may also be provided on the master communication device which enables a headset to be plugged in to facilitate easy use by a parent over a prolonged period. As noted above figure 7 illustrates a portion of the teddy bear 15, such as a paw, which includes a charging connection to enable a battery, not shown, in the slave communication device 50 to be recharged.

The master communication device 18 includes all the electronic circuitry and controls for operation by a parent. It includes a transmitter which may be used to communicate with the toy 15 to control movement of one or more movable parts of the toy. In addition the master communication device includes a two channel transmitter/receiver which is used for voice

communication between itself and the slave communication device 50. In like manner the slave communication device 50 includes circuitry housed in the body of an everyday object such as a teddy bear and includes circuitry for a two channel voice transmitter/receiver which enables two-way conversation between a child talking into or at the teddy bear and a parent using the master communication device. The circuitry which may be housed in a housing of the slave communication unit 50 may include voice synchronisation circuitry.

Figure 8 illustrates a further embodiment of the present invention in which the slave communication device is a personal computer (PC) 80 which includes a monitor or TV screen 81 connected to a processing unit 82 via a connecting wire 83. The monitor displays images to a child according to signals generated by the computer processing unit 82. The displayed images are of a character which the child will believe it is talking to. The processing unit 82 includes a transceiver 84 which can be used to send and receive signals via a wireless interface to a parent or further user 14 via a master communication device 18. The further user 14 may be in an adjacent room or other zone from the child 13 as indicated by sectional line 85. In this way the PC and monitor are disguised to the extent that a child or other person with learning disabilities can be made to think they are having a conversation with a character displayed on the user interface screen. It will be understood that a broad range of characters may be displayed on a screen in this way. In particular if a child or other user has a favourite character then the PC may be provided with an application to be run on the PC generating images of this character on the screen.

Figure 9 illustrates the processing unit 82 of the PC 80 in more detail. The PC includes a processing unit 90 which receives input signals from a transceiver control unit 91 via connection 92. The transceiver control circuit is connected to the transceiver 84, which may be an antenna, via connection 93. When a parent or secondary user using the master communication device 18 speaks the speech patterns are encoded in the master communication device and transmitted over the wireless communication link to the antenna 84. The signals are decoded in the circuitry 91 and the signals supplied to the processing unit 90. The processing unit accesses various applications 94 as will be understood by those skilled in the art. One of these applications 95 provides software for generating the image signals to be displayed on the screen of monitor 81. The processor 90 is connected to a data store 96 and to a speaker 97 which can output sounds such as a voice of the displayed character. A microphone 98 is used to detect sounds such as the child's voice in the environment around the PC. Output signals from the processing unit 90 to drive the images on the screen of the monitor 81 are transferred to output 99 which may be connected to the monitor 81 via cable 83 or via any other connection such as a blue tooth connection.

During use an image which will typically be a moving image of a character is displayed on the monitor and a child 13 can notionally speak to the image. The voice of the child is received by microphone 98 and is transferred via the processing unit 90 and controller 91 to antenna 84 and thus to the master communication device with the parent 14. The parent hears the voice of the child speaking to the image. In response or indeed to initiate a child's reaction, the parent speaks into the master

communication device 18 and these signals are transmitted to the PC antenna 84. Voice recognition software in the PC determines the words spoken by the parent and generates signals to make the character react accordingly. These signals may control lip or eye movements on a face of the character or other expressions and/or words or noises output by the speaker 97 which may be a copy of the parents voice (in which case voice recognition software is not required) or via a computer generated voice pattern. In this way the PC is disguised in such a way that the child believes that communication is between themselves and the character displayed on the PC monitor.

It will be understood that in accordance with a further embodiment of the present invention the parent or further user 14 may be provided with a computer as the master communication device. The computer includes a user interface including a screen for displaying images, a microphone for receiving voice signals from a user and at least one speaker for generating noises. The computer may be linked via a fixed connected or wireless connection to a further display screen in a region where a child or other person with learning disability is located. A still further embodiment may be provided by the parent or further user being provided with a walkie talkie as a master communication device and a further walkie talkie or two channel radio communicator being located in the region where the child is located. The second walkie talkie or slave communication device may be itself disguised so that a child does not identify it as a communication device. A two-way communication between the slave and master communication device may take place as above-described. A computer having a monitor or screen may be made reactive to voice output from the

slave communication device. Voice recognition software in the computer may be programmed to be reactive to the parent or other authorised users voice patterns and an image of a character on the screen may be generated so that it appears to the child that it is the character with which it is having a communication. In this way the character mimics the voice input of the parent as well as movement of the character which may occur in accordance with commands or words spoken by the parent.

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Embodiments of the present invention provide a way in which a parent or guardian may talk to a child or a person with learning difficulties through an everyday object such as a toy. By virtue of disguising a slave communication device the child will believe that they are having a conversation with the toy. The parent may monitor the child during a conversation using a video camera and monitor arrangement or may simply listen to the child.

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Embodiments of the present invention provide a means for reading a bedtime story to a child without the presence of the parent in the room. This may get the child used to falling asleep without a parent being present. It will be understood that in such a case the everyday object may be disguised as a book or any other night time related object.

It will also be understood that according to embodiments of the present invention a multitude of different body portions (or suits) may be provided to selectively disguise the slave communication unit. A parent or guardian would need only to discreetly remove the communication unit 50 from one disguise and place it in another selected disguise.

It will be understood that embodiments of the present invention can provide an efficient learning aid. By virtue of a child being focussed on an everyday object  
5 seemingly talking and listening to the child the child's attention can be maintained and learning promoted.

It will be understood that embodiments of the present invention may be made of materials conforming to  
10 the Kite standards of safety for children's toys.

Whilst specific preferred embodiments of the present invention have been above described it will be understood by those skilled in the art that the present invention is  
15 not limited to the specifics described. Rather variations and modifications may be envisaged without departing from the scope of the present invention.